

the under surface of the leaves is covered with numerous fine short hairs.

FIELD MUSEUM OF NATURAL HISTORY,
Chicago, Illinois

THE RELATION OF *PINUS RIGIDA* TO PHYSIOGRAPHIC FEATURES AND SOIL TYPES IN CENTRAL MASSACHUSETTS—In the summer of 1935 and 1936 while working on forest succession and soil types in Worcester County, Massachusetts, the writer noticed that *Pinus rigida* Mill., was often found and predominantly so, on certain sandy soils.

In the summer of 1937, I carefully checked the occurrence of pitch pine throughout the 1522 square miles of Worcester County and found that it occurred predominantly (almost exclusively) on soils of the Merrimac and Hinckley series. Occasionally, however, *Pinus rigida* is found on soils of other series, but when this occurs, the trees are found singly in open pastures, to the leeward of dense stands upon the above named soils. The seeds having been carried there by the prevailing wind and there being little competition the pines flourished.

The Merrimac and Hinckley soils are water-lain soils characterized by their relatively high content of sands and gravels. The former soils are found only on terraces, whereas the latter are found on kame terraces, kames,¹ eskers² and outwash³—all stratified deposits of the glacial period. These sterile sandy physically dry soils are ideal for drought-resisting pitch pine.

The following table contains a mechanical analysis of a Merrimac soil. It is apparent that the soil is excellently drained because of the high percentage of fine gravel, coarse, medium and fine sand, while the percentage of very fine sand, silt and clay—the water-retaining textures—is very low.

MECHANICAL ANALYSIS OF MERRIMAC LOAMY COARSE SAND.

Horizon	f.g.	c.s.	m.s.	f.s.	v.f.s.	silt	clay
0-4 inches.....	13.2	37.0	13.0	18.4	4.5	8.4	6.2
4-6 ".....	18.6	36.5	11.6	16.4	5.1	7.6	4.8
6-20 ".....	20.3	38.9	12.0	15.0	3.8	7.0	3.4
20-36 ".....	30.1	35.4	11.5	16.0	2.6	3.5	1.3

¹ Kames—stratified sandy or gravelly hummocks.

² Eskers—irregular ridges of stratified drift.

³ Outwash—alluvial fan-like plains formed in front of retreating ice during the glacial period.

The above observation indicates that the value of herbarium specimens would be greatly enhanced if the exact location, as to soil type and series, could be included with other data on the labels of all plants collected in states where detailed soil surveys have been completed. The collector would, then, not only be contributing data of systematic importance but would also contribute to future research of ecologic importance.—WILLIAM B. BRIERLY, George Washington University.

THE OCCURRENCE OF *POA CHAIXII* IN AMERICA.—*Poa Chaixii* Villars was collected by the writer in Duluth, Minnesota, on June 26, 1937. This collection is of interest because, according to Mrs. Agnes Chase, it is the first one of this species in America. Mrs. Chase reports that the grass is frequent in woodlands of western and central Europe. There are specimens in the United States National Herbarium from practically all the countries within the specified area. In the Herbarium of University of Minnesota there are specimens from Sweden and Finland.

The determination was first verified by Dr. C. O. Rosendahl, University of Minnesota, and later by Mrs. Agnes Chase and Mr. J. R. Swallen, United States National Herbarium. Moreover, Mrs. Chase furnished the following reference: "*Poa Chaixii* Villars, Flora Delphinalis 7. 1785. '—in sylvis & pratis alpestribus circa Chaudun' Named for Abbé Dominique Chaix, 1730–1799."

Several varieties of *Poa Chaixii* Vill. have been described. Mrs. Chase concludes that the Duluth specimen is the "species itself" and is "very like one from the Bois de Boulogne, near Paris."

Poa Chaixii Vill. grows in Duluth on Hunter's Hill which slopes to the residential district of Hunter's Park. At the base of the south-facing slope winds a stream. The hill is a ridge-like formation with bare cliffs of basalt on the south and northeast sides. A trail, used by occasional hikers, leads to the south cliff over 1200 feet above the sea level, and follows the southeast slope through the woods to the street level. A transition forest covers the hill. In the *Tilia-Acer* association grow several species of deciduous trees characteristic of the region. Toward the base of the slopes are scattered stands of *Pinus Strobus*, *Picea canadensis*, and *Abies balsamea*. *Dirca palustris*, *Acer spicatum*, and *Taxus canadensis* are representative among the native shrubs. The ground flora is rich and varied in native species. On